GlobICE

Client User Manual

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1.0	27/01/2010	OS	First official issue
1.1	30/06/10	OS	Added *globice_config.xml* configuration description

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1. Introduction

1.1 Purpose of this document

This document describes steps to install, configure, and operate the GlobICE Client application. The document also provides technical details required by the system administrators to manage the GlobICE application.

The document intended to be used basis for the installation, configuration and operation of the GlobICE Client application and contains the following chapters:
Chapter 2 lists the applicable and referenced documents.
Chapter 3 and 4 provide overview of the GlobICE application.
Chapter 5 lists the system requirements.
Chapter 6 describes GlobICE Client installation.
Chapter 7 describes GlobICE Client configuration.
Chapter 8 provides an overview of GlobICE Client user interface.
Chapter 9 describes map operations.
Chapter 10 describes system operations.
Annex lists details about products in table format.

1.2 Intended audience

Developers	KSPT developers
Project Partners	Partners in the GlobICE project
ESA	ESA is the customer

1.3 Definition, Acronyms and Abbreviations

AOI	Area Of Interest
CliC	The Climate and Cryosphere Project
DUE	Data User Element
EEZ	Exclusive Economic Zone
ESA	European Space Agency
GI	GlobICE
GML	Georeferenced Mark-up Language
HTTP	Hyper Text Transfer Protocol
HW	Hardware
JPEG	Joint Photographic Experts Group
KSPT	Kongsberg Spacetec AS
LAS	Live Access Server
netCDF	network Common Data Form
NFS	Network File Server
QA	Quality Assurance
QL	Quicklook (A low resolution image of an ice product)
ROI	Region Of Interest
SAR	Synthetic Aperture Radar
SW	Software
UM	User Manual
URL	Uniform Resource Locater
WMS	Web Map Service
XML	eXtensible Markup Language

2. Documents

2.1 Applicable Documents

N/A

2.2 Referenced Documents

N/A

3. General Overview

The GlobICE project is a part of European Space Agency's (ESA) Data User Element (DUE) of the Earth Observation Envelope Programme.

The main purpose of GlobICE is to:

- Define, implement and validate sea-ice information system
- Support the World Climate Research Programme project - Climate and Cryosphere (CliC), with validated sea ice motion, deformation and flux products derived from SAR data in the ESA archive

GlobICE Client, part of GlobICE project, is a software to visualize and download different types of available ice products in the form of *netCDF* files. The system provides the users with a comprehensive set of well-defined filtering criteria (such as date, area, product type) to search for the required ice products.

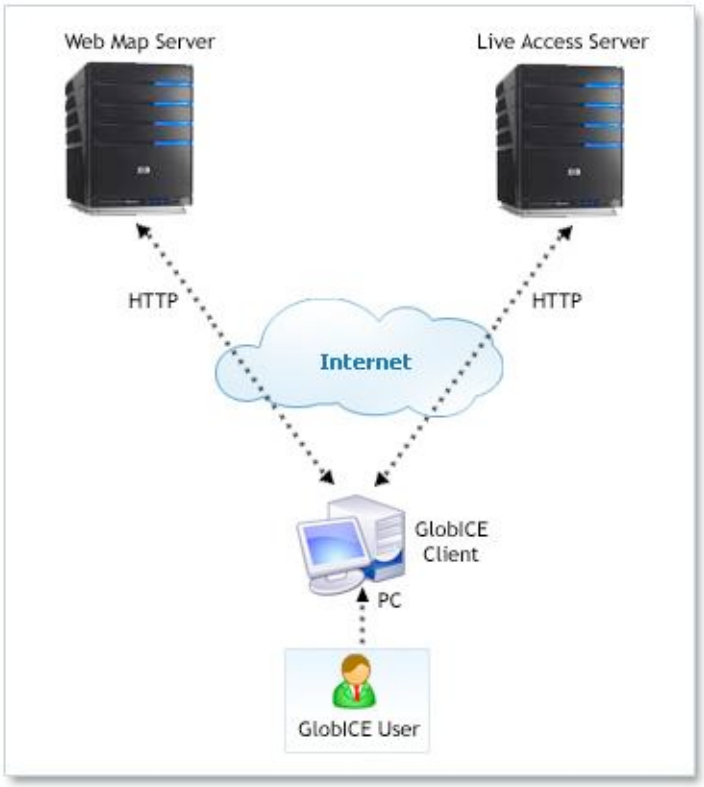
4. Application Overview

4.1 System Overview

GlobICE Client is a single-user desktop application that enables user to query, visualize and download various ice products. GlobICE Client runs on Linux and uses HTTP protocol for communication across Internet.

4.2 System Components

GlobICE Client consists of the following components:



- GlobICE User: GlobICE Client user (henceforth referred to as "the user").
- GlobICE Client: GlobICE Client is the main component of the system. This is the operator console, which provides a graphical user interface to operate the application and enables the user to query, visualize and download the ice products.
- Live Access Server: Live Access Server is a server implementing the OGC Sensor Observation Service (*SOS*). It provides product information, metadata and query details; and enables the user to download ice products.
- Web Map Service: Web Map Service (UMN Mapserver) is a part of Live Access Server and produces a map of geo-referenced data. A map is a visual representation of geo-data and it is not the data itself. If the WMS is not running, WMS maps will not be available to GlobICE Client application.

4.3 Functional Overview

The following steps describe typical workflow of the GlobICE Client application:

1. GlobICE Client user specifies the query parameters using the operator console and submits the query.
2. GlobICE processes the query and displays the results on the operator console.
3. User can visualize the metadata properties of products or perform other functions provided by GlobICE to decide on the products useful to the user.
4. User downloads the product(s) using the download functionality provided by GlobICE.

5. System Requirements

5.1 Minimum Hardware Requirements

Hardware Component	Configuration
Processor	Intel Pentium 4 Processor 3.20 GHz 2 MB 2x512 MB
RAM	2 GB (1 GB free, available for JVM)
Hard Disk	200 GB SATA
Monitor Resolution	1024 x 768 pixels or above

5.2 Software Requirements

Software Component	Specification
Operating System	SUSE Linux /Windows
Platform	SUN JDK 1.6 (32-bit version)

The GlobICE Client is specifically tested on SUSE Linux 10.1 (i586) /Windows XP and it should run on most systems with Java support.

To check whether computer is equipped with JRE 1.6, perform the following steps:

1. Open the terminal console
2. Run the command below and check the output

```
$ java -version
```

The output of preceding command must show the version as *1.6.0* or above.

6. Installation

6.1 Introduction

This chapter explains the steps to install and configure a GlobICE Client system.

6.1.1 GlobICE Installation Media

The GlobICE Client Installation media contains the following files in installation kit:

- *globice--installer.jar* (A Java Archive file)
- *installer-readme.txt* (A text document)

6.2 Installing GlobICE Client

6.2.1 Installation on Linux

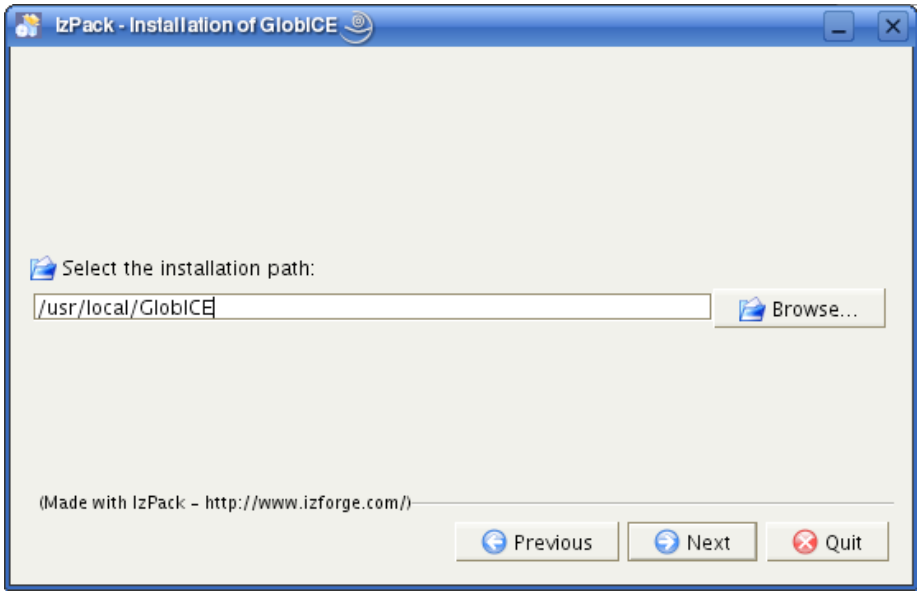
Perform the following steps to install the GlobICE Client application on a computer with Linux operating system:

1. Copy the installation folder from the installation media to the local machine.
2. Open a console window and navigate to the installation folder.
3. Execute the command in console:
   `/GlobICE –Client # java –jar globice-installer.jar`

The GlobICE installation begins.

IzPack - Installation of GlobICE
Welcome to the installation of GlobICE 1.0.0!
This software is developed by:
- Kongsberg Spacetec AS <globice@spacetec.no>
The homepage is at: http://globice.mssl.ucl.ac.uk/
(Made with IzPack - http://www.izforge.com/)
Next
Quit

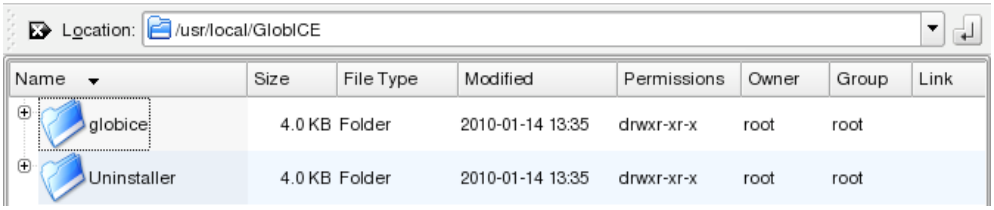
4. Click *Next* to continue.



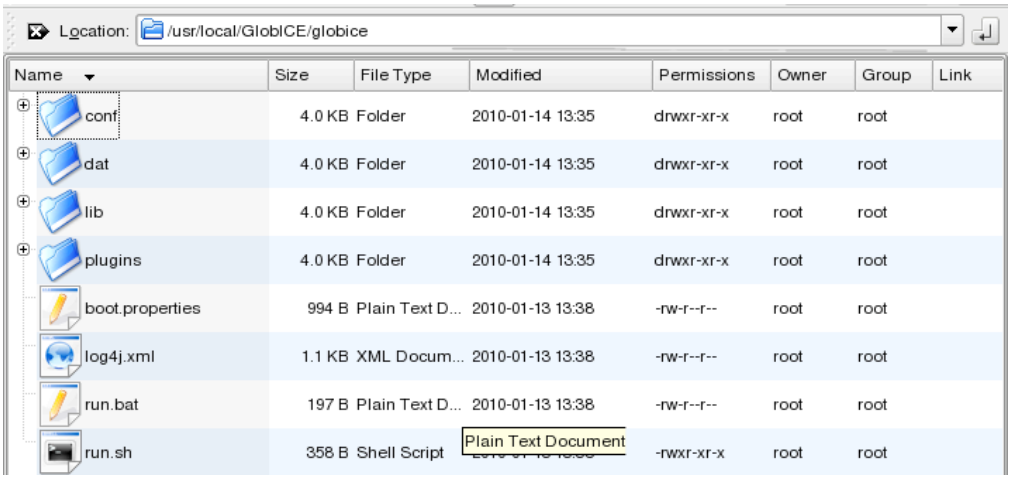
5. By default, the application is installed in the directory */usr/local/GlobICE*. You can click *Browse* to specify a different directory to install GlobICE Client.
6. Click *Next* and follow the on-screen instructions to complete the setup process.

After installation, the following two directories are created in the installation directory (specified in step 5 above) of local machine:

- globice
- Uninstaller



The *globice* directory contains all the files necessary to run GlobICE Client.

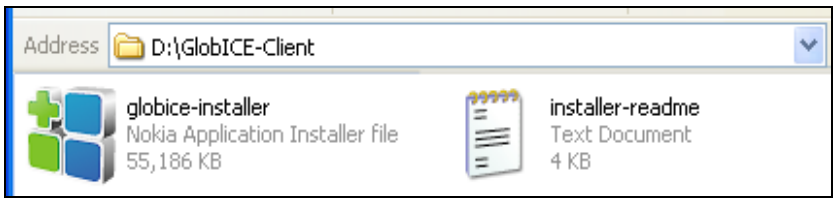

Location: /usr/local/GlobICE/globice
Name
Size
File Type
Modified
Permissions
Owner
Group
Link
conf 4.0 KB Folder 2010-01-14 13:35 drwxr-xr-x root root
dat 4.0 KB Folder 2010-01-14 13:35 drwxr-xr-x root root
lib 4.0 KB Folder 2010-01-14 13:35 drwxr-xr-x root root
plugins 4.0 KB Folder 2010-01-14 13:35 drwxr-xr-x root root
boot.properties 994 B Plain Text D... 2010-01-13 13:38 -rw-r--r-- root root
log4j.xml 1.1 KB XML Docum... 2010-01-13 13:38 -rw-r--r-- root root
run.bat 197 B Plain Text D... 2010-01-13 13:38 -rw-r--r-- root root
run.sh 358 B Shell Script Plain Text Document -rwxr-xr-x root root

The *Uninstall* directory contains only one file: *uninstall.jar*. This file can be used for uninstalling the GlobICE Client from the computer.

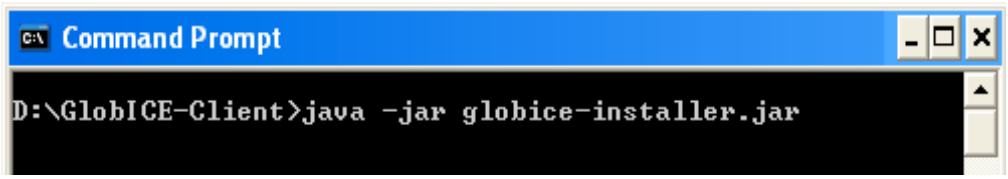
6.2.2 Installation on Windows

Perform the following steps to install GlobICE Client on a computer with Windows operating system.

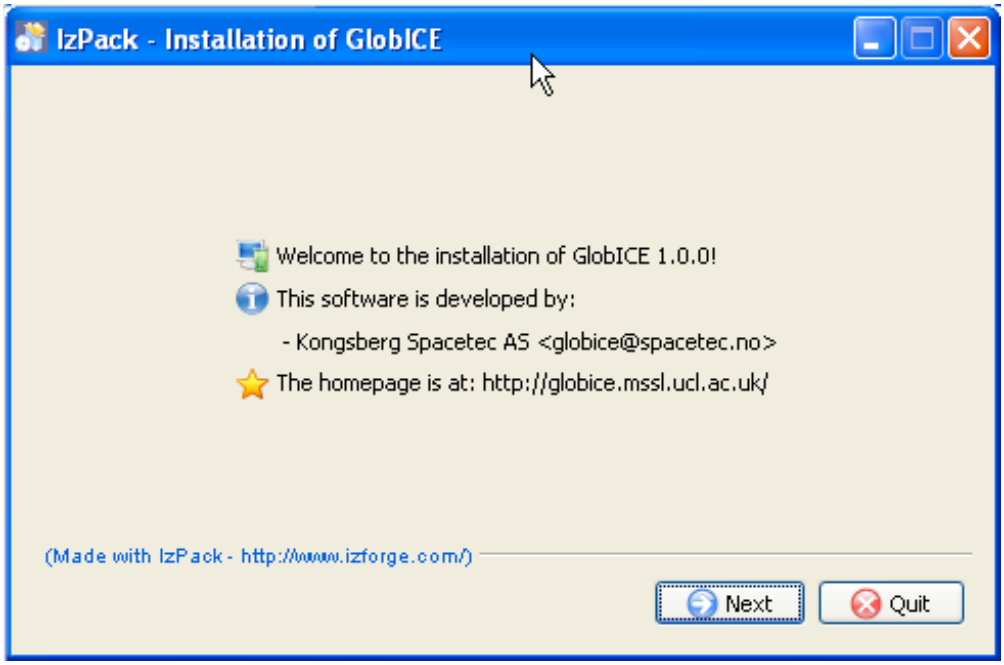
1. Copy all the files from GlobICE Client installation kit to local machine.
2. GlobIce Client setup can be launched in 2 ways:
   a. Run the executable *globice-installer.jar* file by double clicking on it.



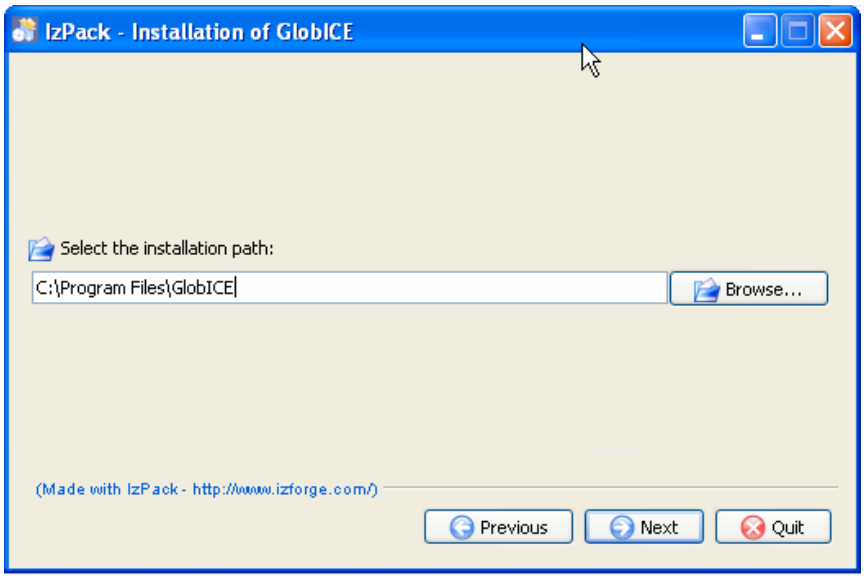
   b. Run the following command at command prompt:
   <installation folder>\java -jar globice-installer.jar



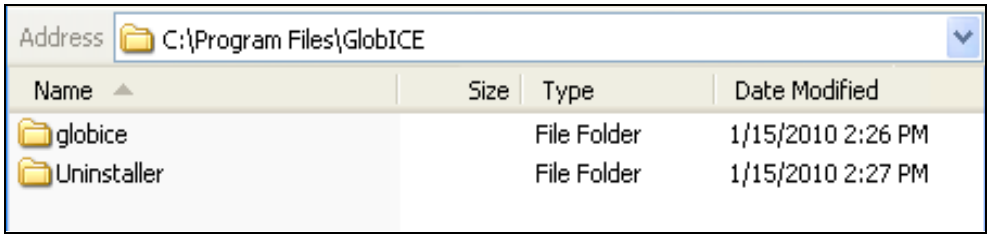
3. The GlobICE installation begins.


IzPack - Installation of GlobICE
Welcome to the installation of GlobICE 1.0.0!
This software is developed by:
- Kongsberg Spacetec AS <globice@spacetec.no>
The homepage is at: http://globice.mssl.ucl.ac.uk/
(Made with IzPack - http://www.izforge.com/)
Next
Quit

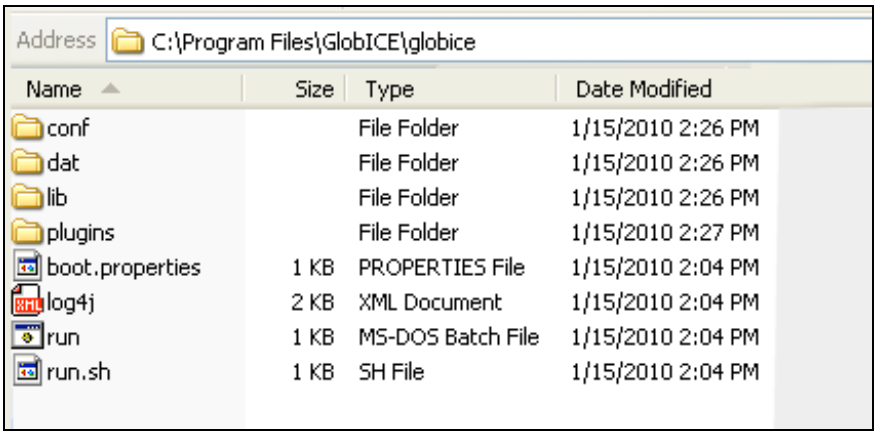
4. Click *Next* to continue.



5. By default, the application is installed in the folder *\Program Files\GlobICE*. You can click *Browse* to specify a different location to install GlobICE Client.
6. Click *Next* and follow the on-screen instructions to complete the setup process.
7. After installation, the following two folders are created in the installation directory (specified in step 5 above) of local machine:
   a. Globice
   b. Uninstaller



The *GlobICE* folder contains all the files necessary to run GlobeICE Client.



The *Uninstall* folder contains only one file: *uninstall.jar*. This file can be used for uninstalling the GlobICE Client from the computer.

6.3 Launching GlobICE Client

6.3.1 Launching in Linux

To launch the GlobICE Client application in Linux:

1. Open a console window and navigate to the *globice* directory on the local machine.
2. Execute the following command:
   `$ ./run.sh`

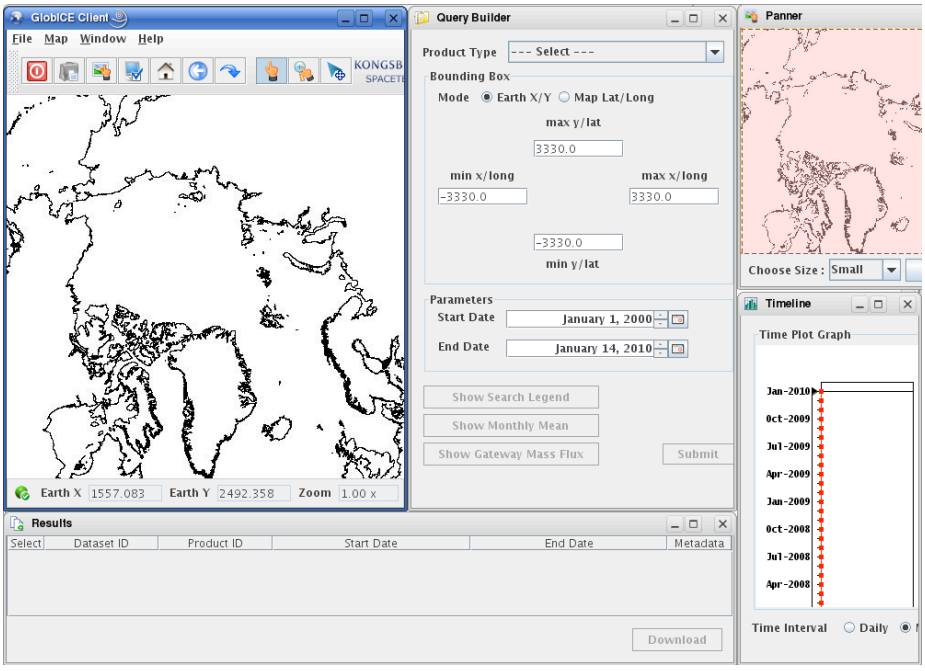
6.3.2 Launching in Windows

To launch the GlobICE Client application in Windows:

1. Navigate to the *GlobICE* folder on the local machine.
2. Double click on the `run.bat` file in *GlobICE* folder.

The application splash screen appears:

Next, the main window of GlobICE Client application displays:



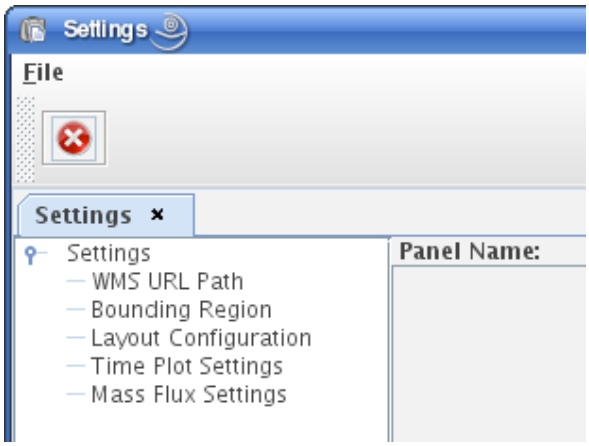
7. Configuration

This chapter explains the configuration for operating the GlobICE Client application.

It is recommended that only the expert users or administrators of GlobICE application should perform configuration settings.

7.1 Configuring GlobICE Settings

1. Click button on toolbar in GlobICE Client main application window. Settings window opens.

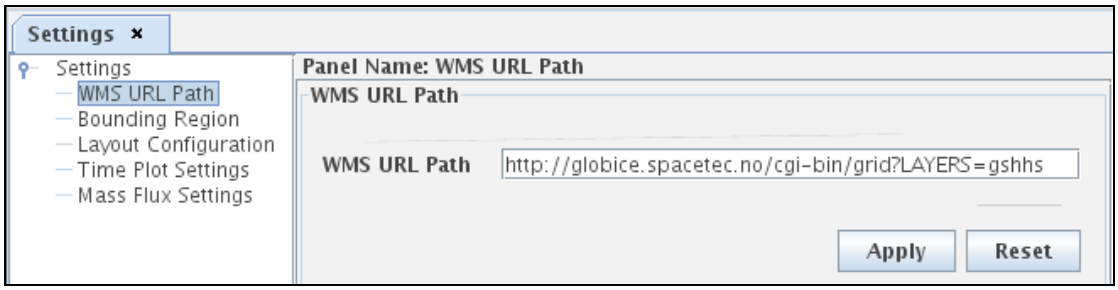


2. Configure the settings as described in the subsequent sections of this chapter.
3. After configuring and saving the settings, click button to close the *Settings* window.

7.1.1 WMS URL Path

This setting specifies the path for WMS. This path is used by GlobICE Client to fetch the WMS map & images.

1. Click WMS URL Path node shown in the Settings tree view.



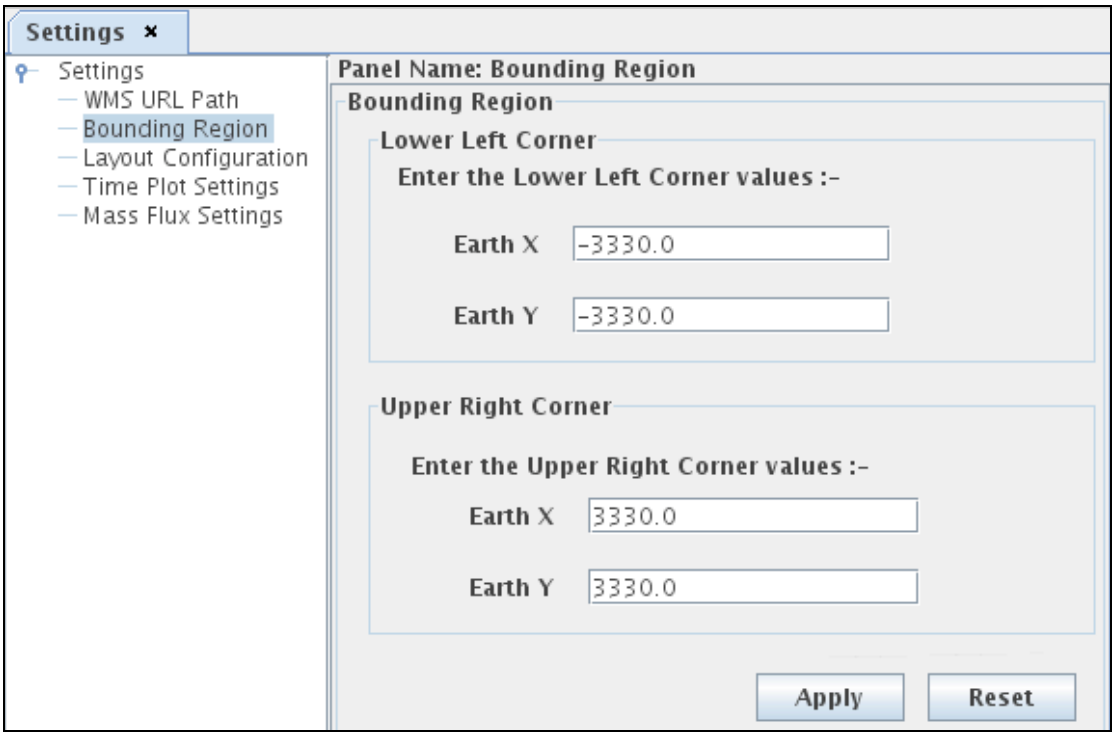
2. Enter the WMS URL Path in the text box.
3. Click *Apply* button.

To reset the *WMS URL Path* field, click *Reset* button.

7.1.2 Bounding Region

This configuration specifies the bounding region that will be preloaded in the Query Builder Window at GlobICE Client start-up. This also corresponds to the bounding region of WMS map shown in the Main Window.

1. Select Bounding Region node shown in the Settings tree view.



The parameters given under Bounding Region are:

1) Lower Left Corner: These are the *lower left corner Earth X* and *Earth Y* coordinate values, selected to display the area of earth map, to view in *Viewport* and marked as selected region for analysis.
2) Upper Right Corner: These are the *upper right corner Earth X* and *Earth Y* coordinate values, selected to display the area of earth map, to view in *Viewport* and marked as selected region for analysis.

2. Click *Apply* button.

To reset the *WMS URL Path* field, click *Reset* button.

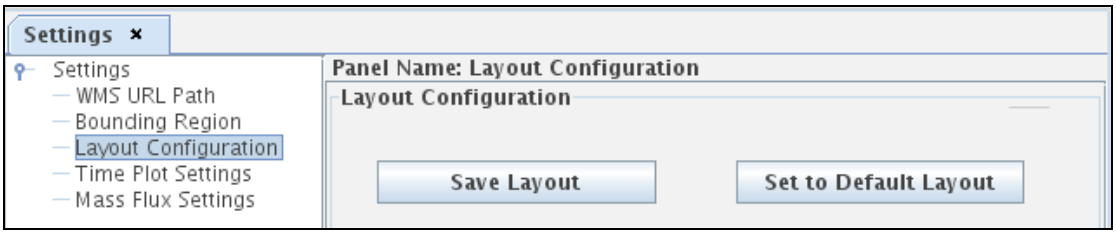
For more details about *Viewport*, refer section 9.1

7.1.3 Layout Configuration

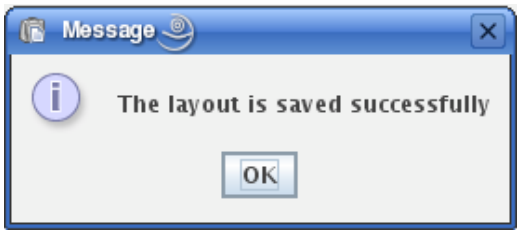
This configuration saves and auto-loads the desired windowing layout of the GlobICE Client application as per user requirement. It also provides a way to set the recommended layout to GlobICE Client default layout.

1. Select Layout Configuration node shown in the Settings tree view. Two buttons are be displayed:

- *Save Layout*
- *Set to Default Layout*

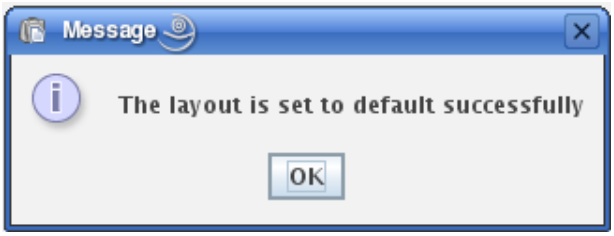


2. On clicking *Save Layout* button, the following message box appears:



The layout created by entering the coordinates in *Bounding Region* setting are be saved to retrieve in future.

3. On clicking *Set Default Layout* button, the following the message box appears:

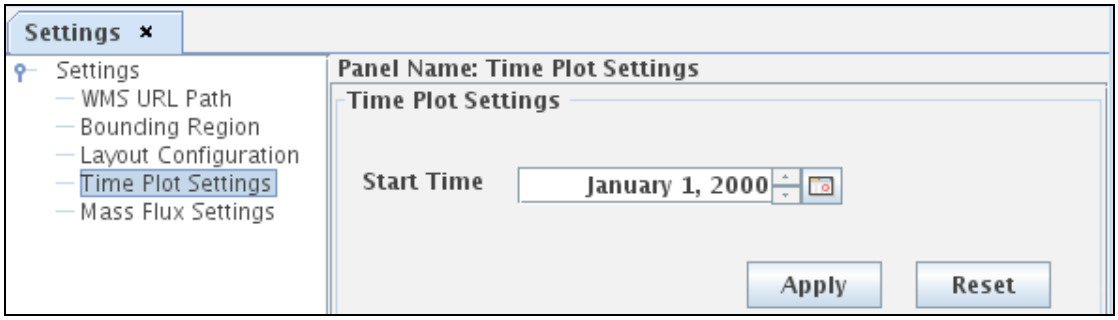


The layout created by entering the coordinates in *Bounding Region* setting is set as default and displayed in Viewport when GlobICE Client restarts.

For more details about *Viewport*, refer section 9.1

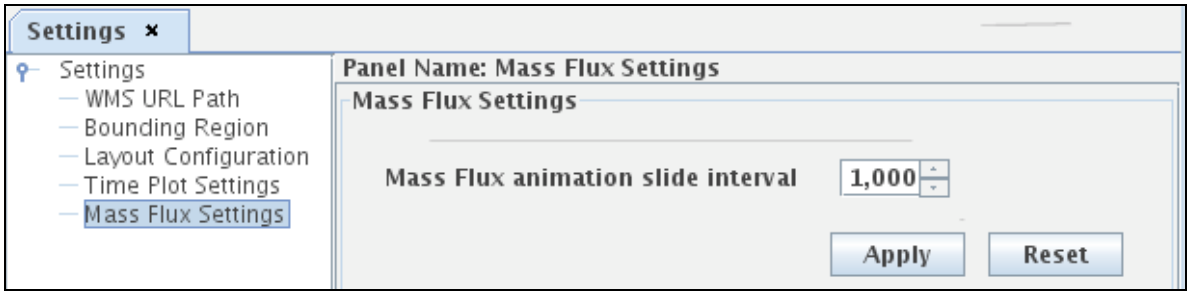
7.1.4 Time Plot Settings

The Time Plot Settings is used to set the start time in Query Builder window and Timeline window. This time setting is preloaded in the Query Builder at GlobICE Client start-up..



7.1.5 Mass Flux Settings

The Mass Flux Settings panel is used to set the Mass Flux animation slide interval in milliseconds for transition of two successive images of selected region/bound layout, in the date range submitted to Query Builder.



To save the time interval, click *Apply* button.

7.2 Configuring globice_config.xml

The *globice_config.xml* file is basically used for configuring and overriding product specific properties in GlobICE Client application. The GlobICE Client configuration requires manual updating of the *globice_config.xml* file. This file is located at *conf* folder in the GlobICE Client setup.

In *globice_config.xml* file, all the tags are optional, except the *<clientConfigSOSURL>* tag. The *clientConfigSOSURL* tag is the main and mandatory tag for GlobICE Client configuration, which specifies a *HTTP GET URL* along with the required parameters for fetching all the configuration data for all the product types during the GlobICE Client start-up. The GlobICE client application may not run all features if this tag is not configured with correct URL.

The schema of *globice_config.xml* file is defined in the *globice_config.xsd* file. See annex for more details about the *globice_config.xsd* file definition and contents.

The *globice_config.xml* file is read at the start-up and the *clientConfigSOSURL* value is referred to fetch the data.

```
<?xml version="1.0" encoding="utf-8" ?>
- <config type="globice" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation="globice_config.xsd">

  --
  --

  <clientConfigSOSURL>http://globice.spacetec.no/cgi-bin/product-type?
  version=1.0.0&service=SOS&request=GetObservation&responseFormat=text/xml;
  %20subtype= %22om/1.0.0%22&offering =product_type_sos&observedproperty
  =product_type_sos</clientConfigSOSURL>

  --
  --

 </config>
```

The points to remember while defining/updating the *clientConfigSOSURL* tag:

1. It must have the *HTTP GET URL*.
2. The *&* is used for *&*
3. The *%20* is used for single blank space
4. The *%22* is used for double quotation marks (“)

The response received against the *clientConfigSOSURL* tag contents the parameter values which are product type specific configuration for the GlobICE Client. Typically it consist of, but not limited to, *product_id* (type of the product), *prod_description* (précised description of the product type), *wms_base_url* (wms base URL for a particular product type), and many other parameters which are required in various stages of GlobICE Client workflows.

Typically the *product_id* is used for mapping all the product specific parameters defined in the *globice_config.xml* file and the response received against the *clientConfigSOSURL*. On mapping, all the parameter values, other than *product_id*, they are overridden by the values defined in the *globice_config.xml*.

For example:

The snapshot of the response received by *clientConfigSOSURL*:

```
- <om:result>
  -
    -
      -
      <ms:product_id>EULIMGPAIR</ms:product_id>
      <ms:prod_description>Eularian Image Pair</ms:prod_description>
      <ms:wms_base_url>http://globice.spacetec.no/cgi-bin/eulimgpair?
        LAYERS=eulimgpair_grid,eulimgpair_ls,gshhs</ms:wms_base_url>
      -
    -
  -
  </om:result>
```

The snapshot of *globice_config.xml* file:

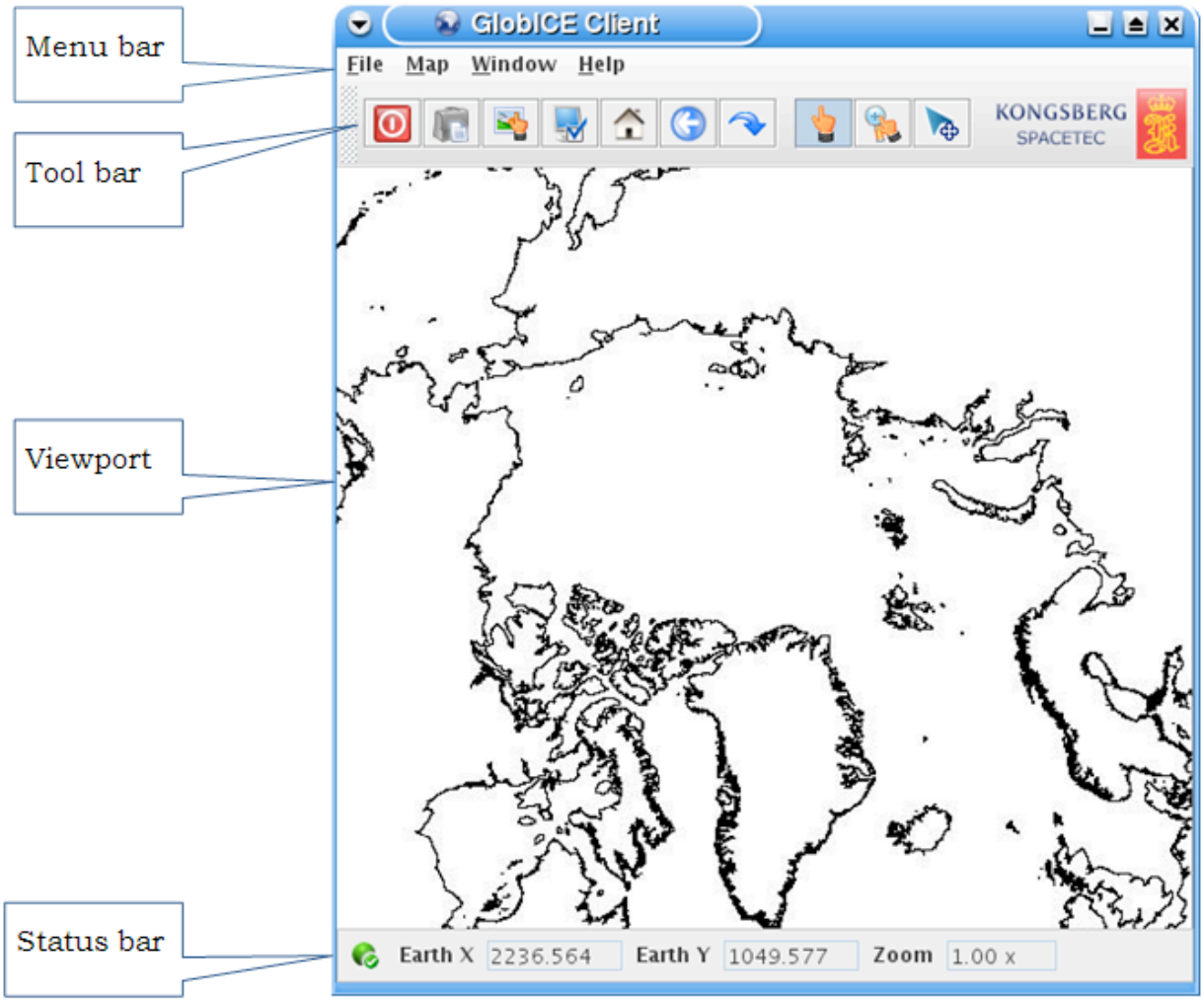
```
- <productType>
    <product_id>EULIMGPAIR</product_id>
    <prod_description>Eularian Image Pair(A -- B)</prod_description>
  </productType>
```

The value of *prod_description* (“*Eularian Image Pair*”) fetched using the *clientConfigSOSURL* will be overridden with the new value (“*Eularian Image Pair(A -- B)”*) defined in the *globice_config.xml* at the start-up of GlobICE Client application. This overridden value will be used through out the application.

8. User Interface

8.1 Main Window

GlobICE Client main window displays the default WMS map. Main window has a menu bar with menu items for various functionalities and a toolbar for frequently used functions. The part of window that displays portion of map currently visible to the user is called *Viewport*. Using mouse, you can roam the image to view the unrevealed areas of the image.



8.1.1 Menu bar

The *Menu bar* contains menu items for various functionalities, as shown below:

- File
- Map
- Window
- Help

8.1.2 Toolbar

The *Toolbar* is located below the Menu bar and provides buttons for frequently used functions, such as:

- Exit: closes the main window and exit GlobICE Client application.
- Open Settings Window: opens the Settings Window for configuring the GlobICE Client application.
- Panner: opens Panner Window.
- Save Layout: saves the current layout of application windows.
- Reset: resets the application state.
- Back to Search Visualization: returns to the last search visualization.
- Reload Configuration: reloads the client configuration.
- Roam Tool: selects the roam/pan tool.
- Zoom Tool: selects the zoom tool.
- Selection Tool: activates the selection tool.

8.1.3 Status bar

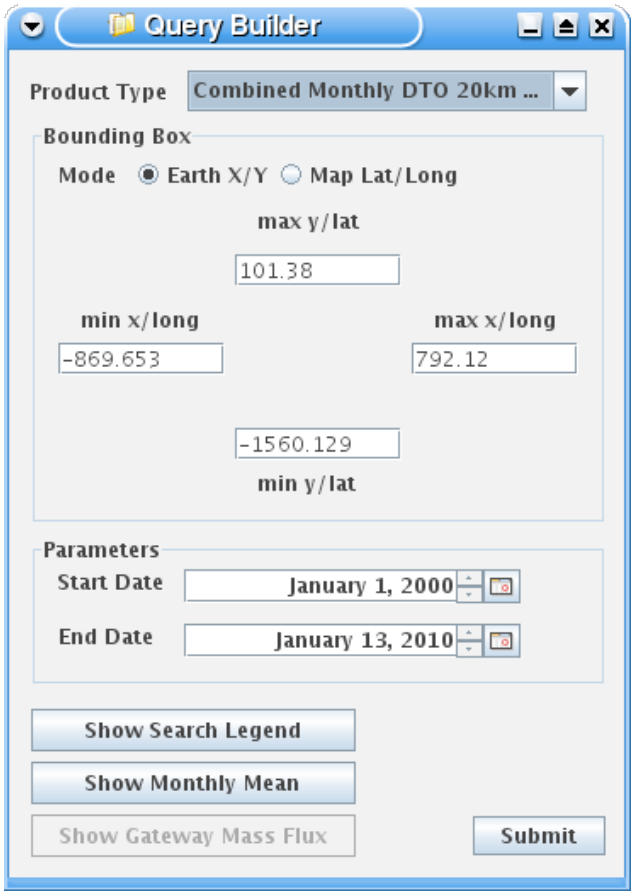
The *Status bar* is located at the bottom of main window and it provides the following details:

- The icon indicates accessibility of WMS server. In case the WMS server is not accessible, the icon changes to
- *Earth X* and *Earth Y* values
- Current zoom level

When a Live Access Server query is being processed, an icon appears on status bar.

8.2 Query Builder

Query Builder window presents various options for querying the ice products. It also enables you to specify additional parameters that can be used in other functionalities of GlobICE.



Query builder window provides following query parameters:

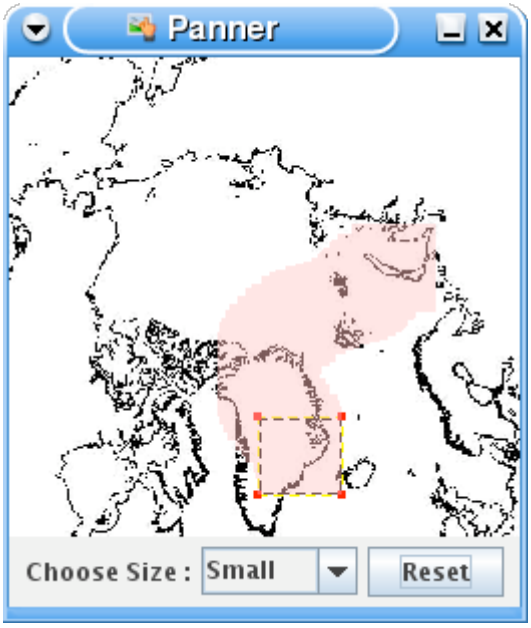
- Product Type: displays the type of ice product to be selected
- Bounding Box: specifies the ROI for query
    - Mode: specifies the mode of entering bounding box. Here, you can choose either Earth X/Y or Map Lat/Long, to enter the values of Mode parameters.
- Parameters (Date Range):
    - Start Date: Select or enter the start date
    - End Date: Select or enter the end date
- Submit: submits the search query. Please refer section 10.1.2 for more details.

Apart from the query parameters, the Query Builder also enables provides additional details. Click the following buttons to view the respective information:

- Show Search Legend: displays the legend used in search visualization. Please refer section 10.3 for more details.
- Show Monthly Mean: displays the monthly mean images. Please refer section 10.13 for more details.
- Show Gateway Mass Flux: displays the animation of mass flux products. Please refer section 10.14 for more details.

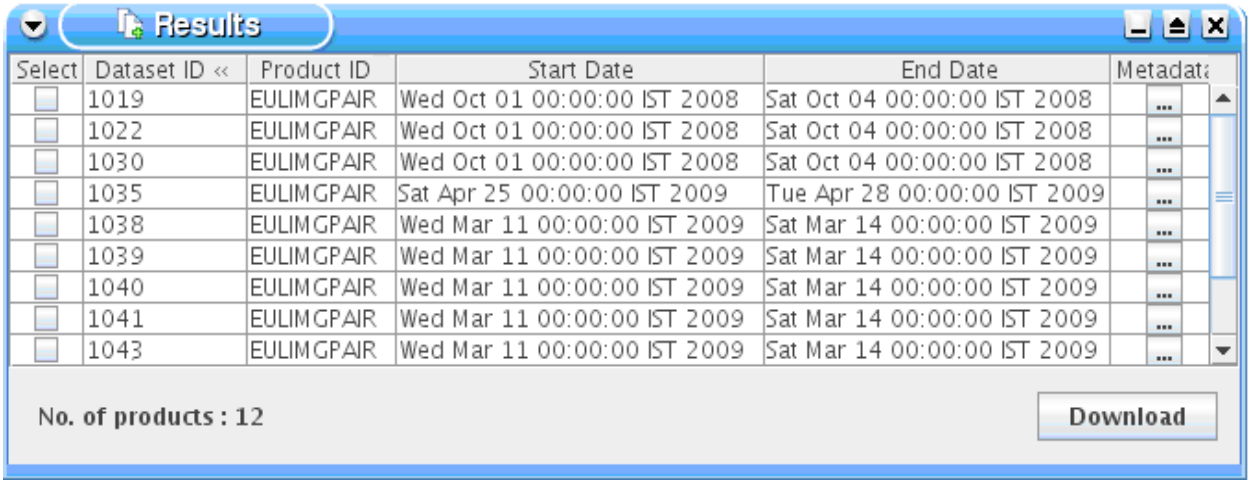
8.3 Panner

The *Panner* window shows a thumbnail view of the WMS map displayed in the Viewport of main window. To roam across the map, click on various parts of image in the Panner window. When you perform a zoom-in or zoom-out action, the main window resizes the Viewport box in the Panner window. The Panner window also shows a trace of the image areas visited.
Also refer section 9.1 for more details about Panner.



8.4 Result Window

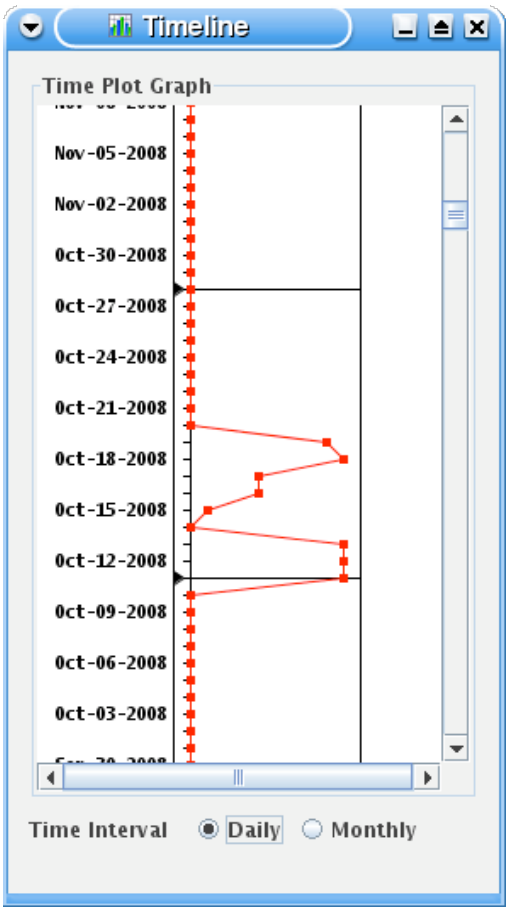
Results window displays the list of the results after a search query is executed. It also enables you to select and visualize metadata, and to download the necessary ice products.


Results
Select
Dataset ID
Product ID
Start Date
End Date
Metadata
1019 EULIMGPAIR Wed Oct 01 00:00:00 IST 2008 Sat Oct 04 00:00:00 IST 2008
1022 EULIMGPAIR Wed Oct 01 00:00:00 IST 2008 Sat Oct 04 00:00:00 IST 2008
1030 EULIMGPAIR Wed Oct 01 00:00:00 IST 2008 Sat Oct 04 00:00:00 IST 2008
1035 EULIMGPAIR Sat Apr 25 00:00:00 IST 2009 Tue Apr 28 00:00:00 IST 2009
1038 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1039 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1040 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1041 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1043 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
No. of products : 12
Download

8.5 Timeline Window

The *Timeline* window enables you to visualize the total area covered by ice products as against query dates for gridded ice products in the form of a graph. The graph is plotted for the time range selected in Query Builder Window by the user.

By default, the time range set with start date as configured in Timeline window and end date as current date of the system.



Timeline graph is only relevant for *gridded* ice products. In case of non- gridded ice products, an information message is displayed in the Timeline window.

For plotting the graph, the following time interval modes are provided:

1. Daily: plots the graph for each date in time parameter of query

2. Monthly: plots the graph for each month in time parameter of query

You can use the sliders in Timeline window to specify the date parameters in search query.

You can set both the sliders on same date or month. Accordingly, the date values will be available for query parameters in *Query Builder* window.

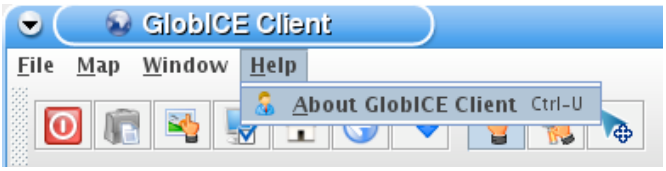
When a query is submitted for gridded ice product, sliders in Timeline Window indicate the query dates in Query Builder window. For non-gridded products, the graph is reset.

For more details about configuring date parameters of Timeline window, please refer sections 10.1.1.3 and 10.1.1.4.

8.6 About GlobICE Client

About GlobICE Client window displays proprietary information of GlobICE Client application. To view this window:

1. Select *Help > About GlobICE Client* menu OR press Ctrl - U keys.



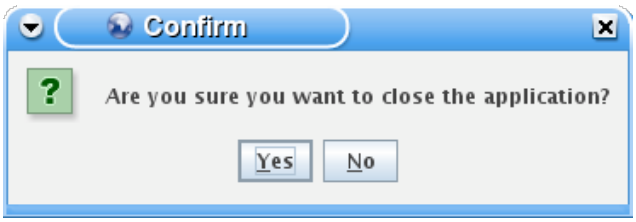
The About GlobICE Client window is shown below:

About GlobICE Client
GLOBiCE
Copyright (c) 1994-2010 Kongsberg Spacetec AS, Norway.
All rights reserved.
This software is the confidential and proprietary information
of Kongsberg Spacetec AS (Confidential Information).
Ok

8.7 Exit from GlobICE Client

To exit the GlobICE Client application:

1. Click the *Exit* button on main application window OR select *File > Exit* from the main menu bar. A confirmation dialog appears with message: "Are you sure you want to close the application?"



2. Click *Yes* to exit and close GlobICE Client application OR click *No* to continue working in GlobICE Client application.

9. Map Operations

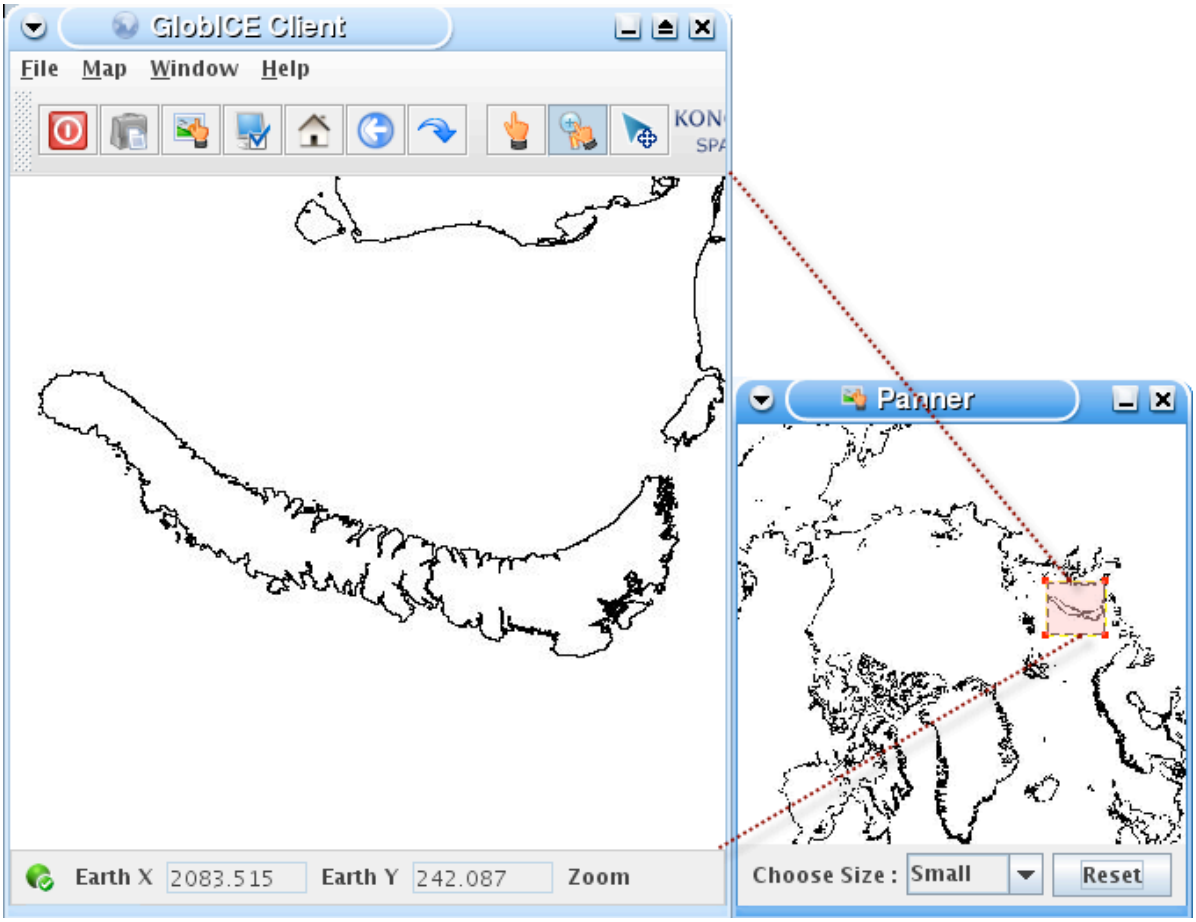
This section describes the imaging operations which can be performed on the map.

9.1 Panning the Map

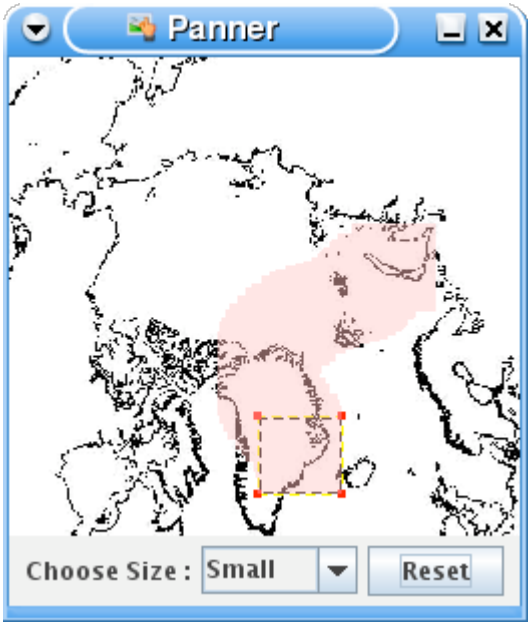
You can pan the map in Main window by using mouse. In addition, the GlobICE Client provides a more powerful tool called *Panner* to pan the map easily. Panner window opens automatically at the GlobICE start-up.

To use Panner:

1. If Panner window is not already open, click *Panner* button from the toolbar of Main Window. *Panner* window appears. It displays the scaled down (thumbnail) version of entire map, enabling you to select different regions of the map easily.
2. Hold down the left mouse button in the map and drag the mouse pointer on the image. This reveals unexplored areas of the map.



3. Click any area of Panner window to reveal other parts of the map in Main Window. As you click different parts of map, Panner window shows a trace of visited areas.



To remove the trace, click *Reset* button.

9.2 Roaming the Map

You can roam the map in Main window by using *Roam* Tool.

To roam the map:

1. Select *Roam* tool from the toolbar in Main Window.
2. Hold down the left mouse button on the map and drag mouse pointer on the map. This reveals unexplored areas of the map.

Roam tool is a default map operation tool and is enabled by default.

9.3 Zooming the Map

9.3.1 Zoom using mouse/keyboard

You can zoom in or zoom out the map in the Main Window in any of the following ways:

Zoom Method	Procedure
Zoom to fit map to maximum extent	Select menu *'Map > Zoom to Max Extent'* from Main window.
Zoom Using Menu	• Select Map > Zoom In • Select Map > Zoom Out
Zoom Using mouse	• Scroll mouse wheel forward to zoom out (move map farther away from eye, decrease the level of detail) • Scroll mouse wheel backward to zoom in (move map closer to the eye, increase level of detail)
Zoom using keyboard	• 1. Ctrl- ↑ (UP arrow key) to zoom in • 2. Ctrl- ↓(DOWN arrow key) to zoom out

GlobICE Client provides some preset zoom levels that can be accessed using menu or keyboard.

Zoom Level	Menu	Keyboard Shortcut
1x	Map > Zoom 1x	Ctrl – 4
1.5x	Map > Zoom 1.5x	Ctrl – 5
2x	Map > Zoom 2x	Ctrl – 6

Here, x refers to the original image dimensions.

9.3.2 Zoom using Zoom Tool

Zoom tool provides the functionality to zoom particular areas of map by selecting that area in the main window. To zoom using Zoom tool:

1. Select *Zoom* tool from the toolbar in Main Window.
2. Hold down the left mouse button on map and drag the mouse diagonally from upper left to lower right to draw selection rectangle.
3. Release the mouse button.
4. Selected rectangular area of the map zooms and fits in the Main Window.

10. System Operations

This section discusses the various functions you can perform using the GlobICE Client application.

It is recommended that this section be read sequentially.

10.1 Searching

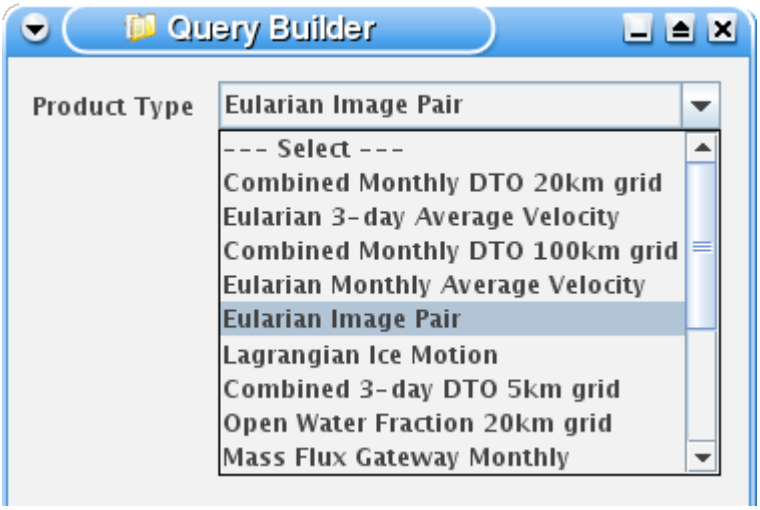
Searching for an ice-product is the basic functionality of GlobICE Client application around which other functionalities work. Searching can be done by setting the query parameters and then submitting the query using Query Builder window.

10.1.1 Setting Query Parameters

Following query parameters are required for making a query. All the query parameters are mandatory and they are set with default values at the start of application.

10.1.1.1 Product Type

This parameter specifies the type of ice product to be searched. All the available Ice products are available in the combo box and the desired product type can be selected. The following screenshot shows a typical list of products from which you can select a product type.



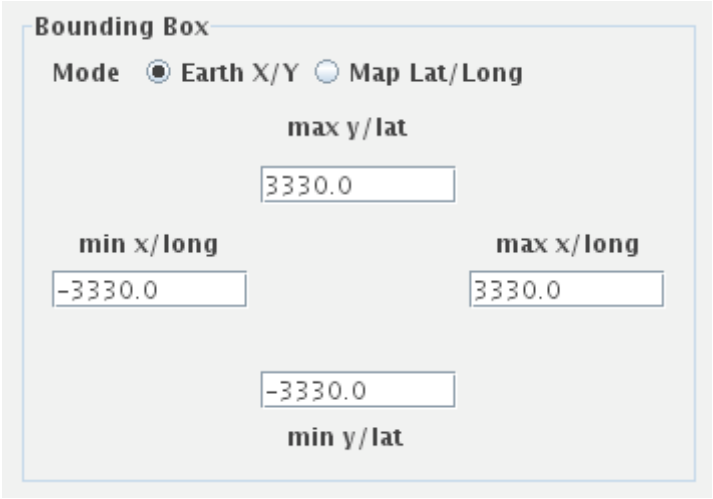
By default the combo box contains *--- Select ---* as option for which query cannot be submitted i.e. *Submit* button is disabled.

A web service provides the Products displayed in the *Product Type* combo box. Thus, if the web service is not running at GlobICE Client start-up, products will not be available in the *Product Type* combo box. In this case, click the button *'Reload Configuration* in the toolbar of Main Window. For detailed description of this functionality, refer section 10.8.

Products listed in the combo box are of gridded or non-gridded type. For the list of supported functionalities for each type, refer the Appendices section.

10.1.1.2 Bounding Box

This parameter specifies the region of interest (ROI) for search query. Bounding box parameter comprises of four individual values that correspond to the geographical boundary of a region of interest.



The Bounding Box parameter comprises of four values mentioned below:

- min x/long: use to specify minimum earth x or longitude
- max x/long: use to specify maximum earth x or longitude
- min y/lat: use to specify minimum earth y or latitude
- max y/lat: use to specify maximum earth y or latitude

Two modes mentioned below are available for specifying the bounding box values:

- Earth X/Y: use to specify the values in absolute earth x or earth y in kilo meters
- Map Lat/Long: use to specify the values in map latitude or longitude in degrees

Values for bounding box can be specified by two alternative ways described below:

1. You can directly type the values in the bounding box text boxes in Query Builder window

2. You can adjust the map in viewport by doing Pan, Zoom or Roam operations and the corresponding boundary values will be reflected automatically in the bounding box text boxes in Query Builder window.

To get expected search results, ensure that *Mode* is properly selected.

If you select the mode for bounding box values as Earth X/Y then:

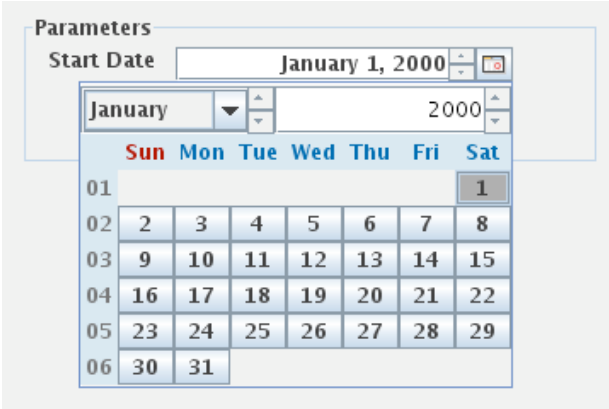
- Earth X value in the status bar of Main Window corresponds to the min x/long value in Query Builder window.
- Earth Y value in the status bar of Main Window corresponds to the max y/lat value in Query Builder window.
- Earth X value in the status bar of Main Window corresponds to the max x/long value in Query Builder window.
- Earth Y value in the status bar of Main Window corresponds to the min y/lat value in Query Builder window.

10.1.1.3 Start Date

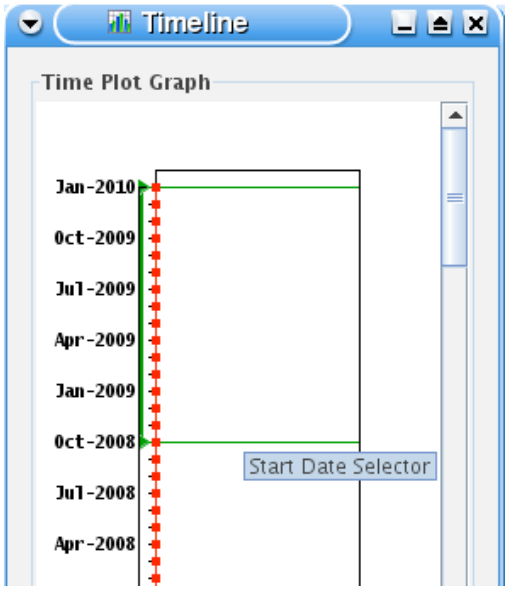
This parameter specifies the start date for query. By default, the value of start date is as configured in *Settings* Window. For configuration of default start date, refer section Time Plot Settings.

Two alternative ways as described below are provided for specifying this parameter:

- Start date can be specified by entering the date directly or by selecting the date from the date control provided in Query Builder window.



- Start date can be specified by using the start date slider thumb in the Timeline Window. When user moves the slider thumb for start date in Timeline window, corresponding value is automatically updated in the Query Builder window. For detailed description of selecting query date using Timeline window, refer section 8.5.

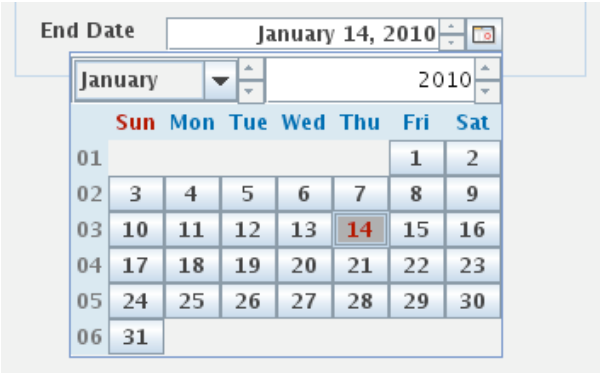


10.1.1.4 End Date

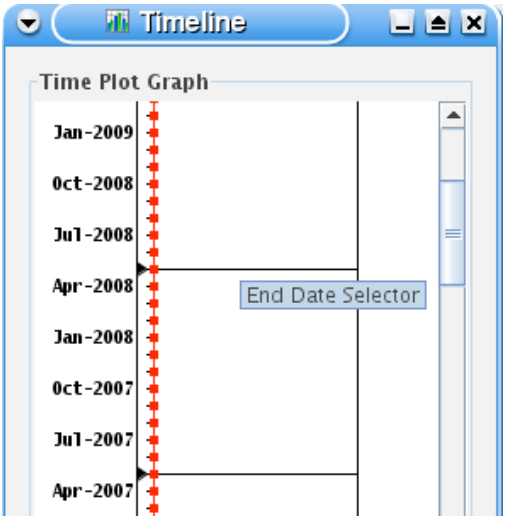
This parameter specifies the end date for query. By default, the value of end date is the current date of the system on which GlobICE Client application is installed.

Two alternative ways as described below are provided for specifying this parameter:

1. End date can be specified by entering the date directly or by selecting the date from the date control provided in Query Builder window.



2. End date can be specified by using the end date slider thumb in the Timeline Window. When user moves the slider thumb for end date in Timeline window, corresponding value is automatically updated in the Query Builder window. For detailed description of selecting query date using Timeline window, refer section 8.5.

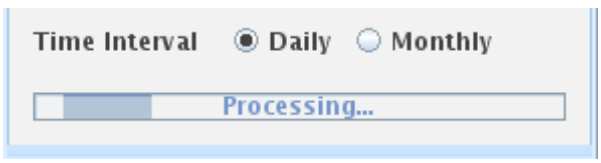


10.1.2 Submitting the Query

After setting all the query parameters, submit the search query clicking *Submit* button in the Query Builder Window. *Results* window and *Timeline* window are updated when search results are available.

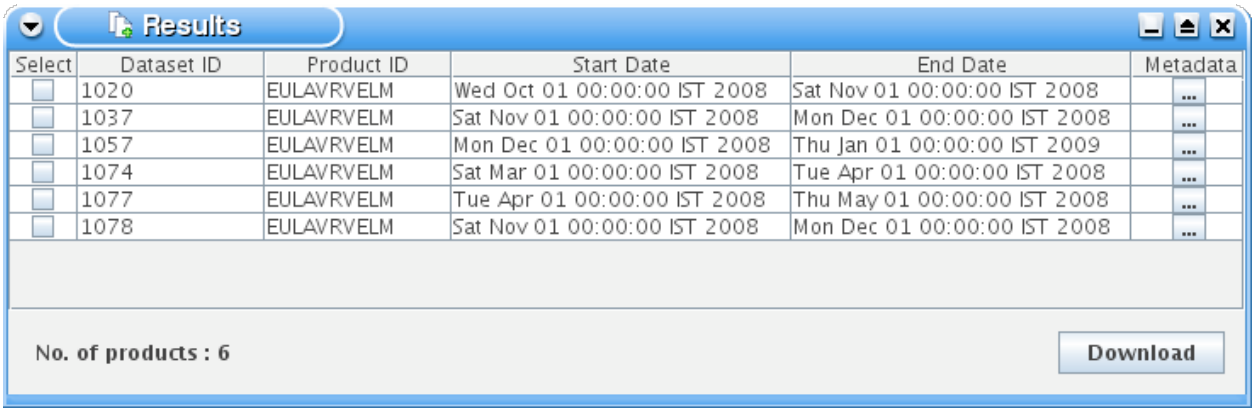
When the query is submitted, query progress is shown in the status bar of Main Window.

Progress of the Timeline query is shown in Timeline window.



10.2 Search results

Results of the search query are shown in Results Window and on the WMS map in Main Window. Each entry in the Results window represents an ice product.

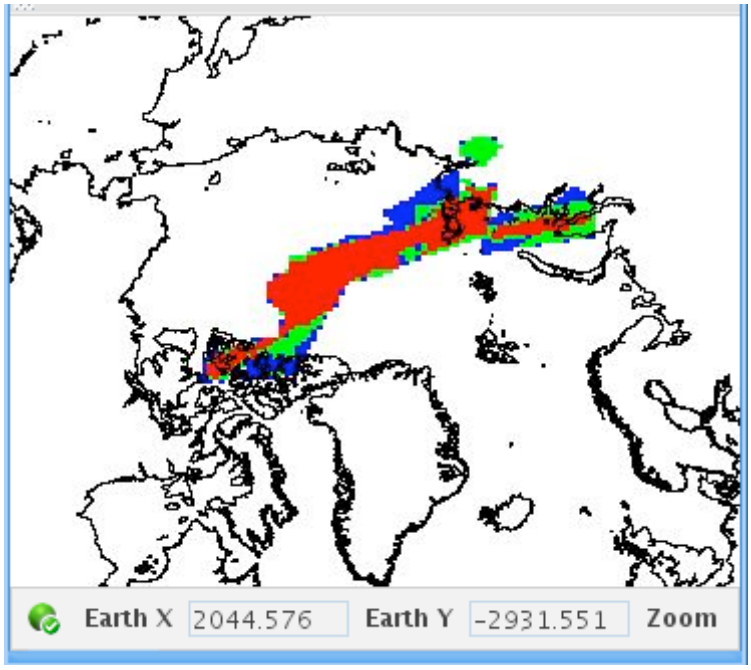

Results
Select
Dataset ID
Product ID
Start Date
End Date
Metadata
1020 EULAVRVELM Wed Oct 01 00:00:00 IST 2008 Sat Nov 01 00:00:00 IST 2008
1037 EULAVRVELM Sat Nov 01 00:00:00 IST 2008 Mon Dec 01 00:00:00 IST 2008
1057 EULAVRVELM Mon Dec 01 00:00:00 IST 2008 Thu Jan 01 00:00:00 IST 2009
1074 EULAVRVELM Sat Mar 01 00:00:00 IST 2008 Tue Apr 01 00:00:00 IST 2008
1077 EULAVRVELM Tue Apr 01 00:00:00 IST 2008 Thu May 01 00:00:00 IST 2008
1078 EULAVRVELM Sat Nov 01 00:00:00 IST 2008 Mon Dec 01 00:00:00 IST 2008
No. of products : 6
Download

Results Window displays the following details:

1. Dataset ID: Unique dataset id of an ice product
2. Product ID: Product type identifier
3. Start Date: Start date of the product
4. End Date: End date of the product
5. Metadata: Click this button to visualize detailed metadata of an ice product

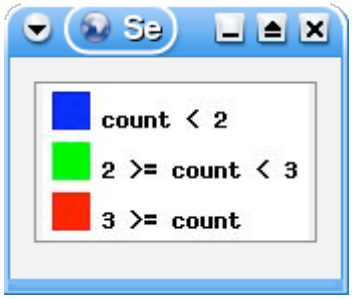
Search results are visualized in the map as filled blocks of different colours.

Legend for this colour scheme is described in the section 10.3.



10.3 Search Legend

Legend for the visualization of search results can be seen by pressing Show Search Legend button in the Query Builder window.

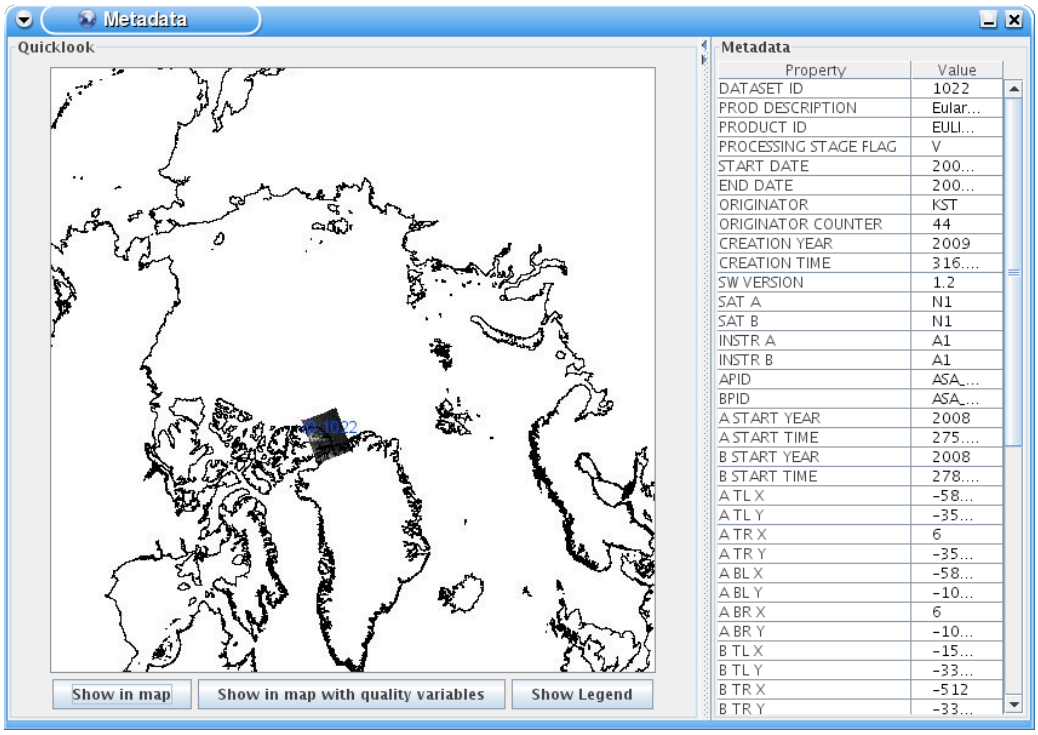


Visualization of the product search is shown on the map in Main window and the Legend window describes the colour coding used in this visualization.

In the snapshot above, the blue colour represents a condition that the number of ice products lying in a particular geographical area is less than 2. If the number of ice products is greater than or equal to 3, then they will be represented in red colour.

10.4 Viewing the Metadata

Results window provides a mechanism to visualize metadata of an ice product. Each row in the Results window has a button ... in *Metadata* column which can be used to launch the Metadata window.



Metadata window visualizes the Quicklook of an ice product as a WMS image along with the metadata displayed as a table. If any link is present in the metadata, then that link is displayed as a Hyperlink and can be clicked to open it in a browser.

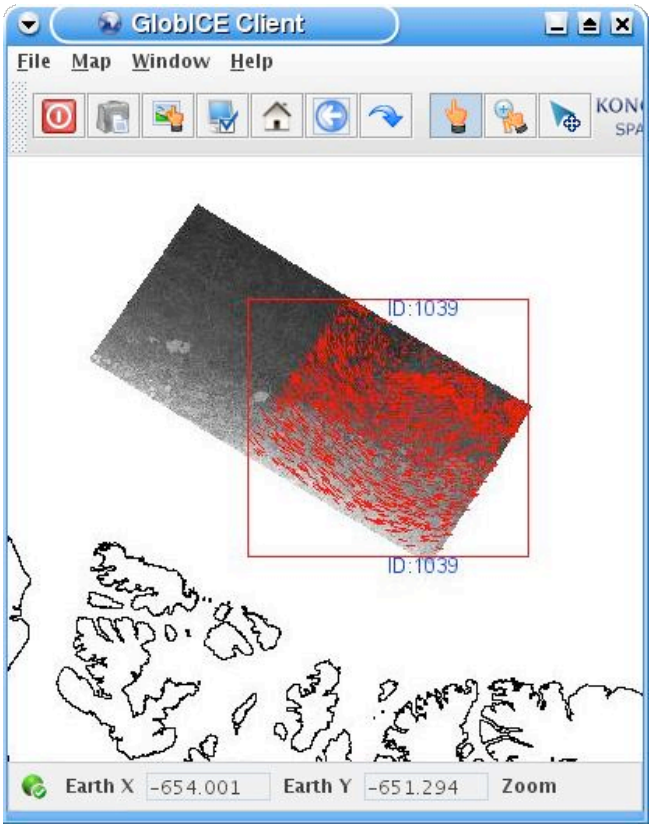
Metadata window also provide buttons for the following functionalities:

1. Show in map: displays Quicklook on map in Main window. Refer section 10.5.
2. Show in map with quality variables: displays Quicklook on map in Main window along with the quality variables. Refer section 10.6.
3. Show Legend: displays the legend used for generating Quicklook. Refer section 10.7.

10.5 Viewing product in map

Metadata window provides a way to view ice product Quicklook on the map in Main window. This can be done by pressing Show In Map button in the Metadata window. This functionality overlays the actual SAR product on the map, along with product Quicklook. Snapshot below demonstrates the map with an ice product Quicklook.

SAR overlay is only valid for EULIMGPAIR product, and not for the other products.

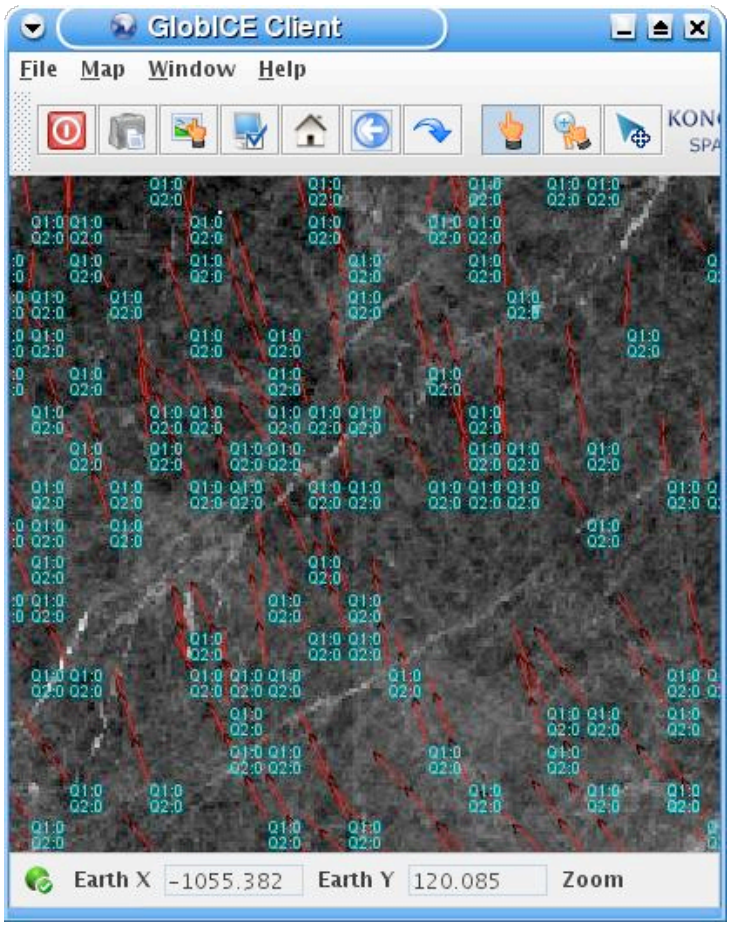


You can quickly revert to the previous search visualization by clicking *Back To Search Visualization* button in the Main window toolbar. For a detailed description of this, refer section 10.9.

10.6 View product in map with quality variables

Metadata window provides a way to view ice product Quicklook along with quality variables on the map in Main window. This can be done by pressing Show In Map with Quality Variables button in the Metadata window. This functionality overlays the actual SAR product on the map along with product Quicklook & Quality variables.

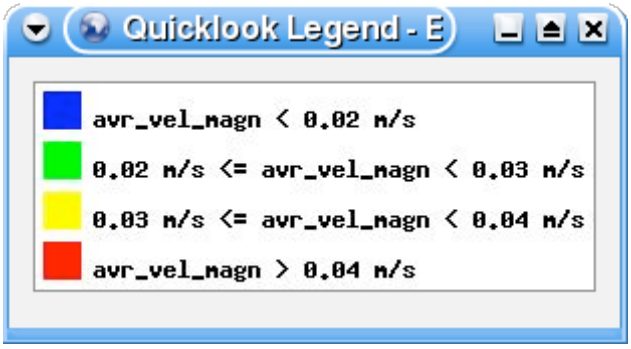
SAR overlay is only valid for EULIMGPAIR product, and not for the other products.



You can quickly revert to the previous search visualization by clicking *Back To Search Visualization* button in the Main window toolbar. For a detailed description of this, refer section 10.9.

10.7 Legend

Metadata window provides a button to see the Quicklook legend. Pressing Show Legend button in the Metadata window visualizes the Quicklook Legend in a separate window.



Quicklook of the ice product is shown in the map in Metadata window. Quicklook Legend window describes the colour coding used in this visualization.

In the above snapshot, blue colour represents a condition that the magnitude of an average velocity is less than 0.02 m/s. If the magnitude of average velocity is greater than 0.04 m/s, then it will be represented in red colour.

10.8 Reload Configuration

Ice products available in the *Product Type* combo box in Query Builder window are made available by a web service. If this service is not running on GlobICE Client start-up, the products will not be listed in *Product Type* combo box of Query Builder. In such case, you can reload the configuration settings by clicking the *'Reload Configuration'* button in the toolbar of Main Window. This functionality tries to reload the configuration and populate the *Product Type* combo box with available products.

Alternatively, from the main window menu bar, select *File > Reload Configuration*

You can quickly reload the configuration by pressing Ctrl - O keys.

10.9 Back to Search Visualization

Back To Search Visualization button in the Main window toolbar provides you a way to quickly revert to the previous search visualization. Note that this functionality is only relevant when Quicklook or Quality variables are overlaid on the map in Main Window.

10.10 Reset

Reset functionality resets the configuration settings to their original state (that is, as they were when the application is started). You can reset the settings by clicking the *Reset* button in the toolbar of Main Window. Reset functionality makes the following changes to the application:

1. Resets the Map in Main Window
2. Resets the parameters in Query Builder Window
3. Clears the Timeline Window
4. Clears the Results Window
5. Resets the trace in Panner Window

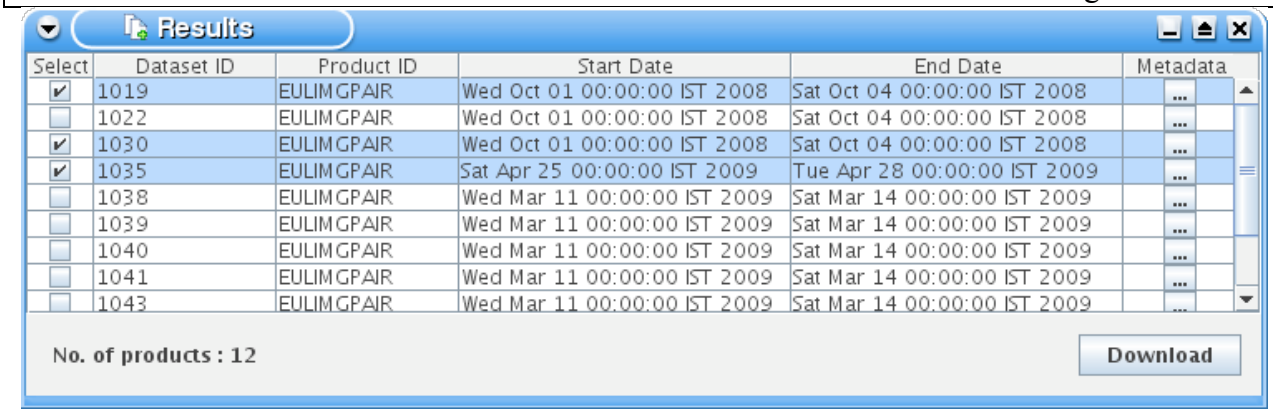
10.11 AOI Selection

Results window displays the results of product search query as a list of products. You can select the products in this list based on the area of interest (AOI), using the *Selection Tool* in the toolbar of Main Window.

Perform the following steps for AOI Selection:

1. Set the necessary query parameters for product search in *Query Builder*.
2. Submit the product search query. *Results* window displays ice products that meet the query. In addition, the WMS map in Main window displays the product search visualization for the products displayed in Results window.
3. Click the *Selection tool* from the toolbar in Main window.
4. Click on the map in Main window OR hold down the left mouse button and drag the mouse diagonally from upper left to lower right to draw selection rectangle around the ice products (multiple product selection). Products lying in the selected AOI are highlighted in the *Results* window.

This functionality uses a web service to fetch the results. Hence, there could be a small delay in highlighting the query results.


Results
Select
Dataset ID
Product ID
Start Date
End Date
Metadata
1019 EULIMGPAIR Wed Oct 01 00:00:00 IST 2008 Sat Oct 04 00:00:00 IST 2008
1022 EULIMGPAIR Wed Oct 01 00:00:00 IST 2008 Sat Oct 04 00:00:00 IST 2008
1030 EULIMGPAIR Wed Oct 01 00:00:00 IST 2008 Sat Oct 04 00:00:00 IST 2008
1035 EULIMGPAIR Sat Apr 25 00:00:00 IST 2009 Tue Apr 28 00:00:00 IST 2009
1038 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1039 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1040 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1041 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
1043 EULIMGPAIR Wed Mar 11 00:00:00 IST 2009 Sat Mar 14 00:00:00 IST 2009
No. of products : 12
Download

10.12 Save Recommended Layout

Save Recommended Layout functionality enables you to save and auto-load the desired windowing layout of the GlobICE Client application as per your requirement.

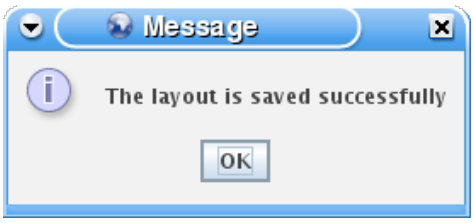
You can also save the Layout using the menu *File > Save Layout.*

The following windows are considered for saving the layout:

1. Main Window
2. Query Builder Window
3. Timeline Window
4. Results Window
5. Panner Window

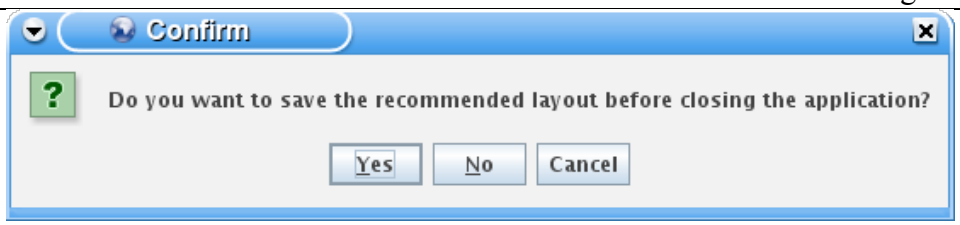
Perform the following steps to save the layout:

1. Adjust the positions of various Client application windows as per your requirement.
2. Click the *Save layout* button on the toolbar of Main Window. Current window layout of the application is stored as a recommended layout and the message *'The layout is saved successfully'* appears.



On restart, GlobICE Client application will use this window layout.

If you try to close the application without saving the changes to layout, application asks if the layout needs to be saved before closing. Click *Yes* to save the layout.



GlobICE Client application also provides a default window layout. For detailed description of this functionality, refer section 7.1.3.

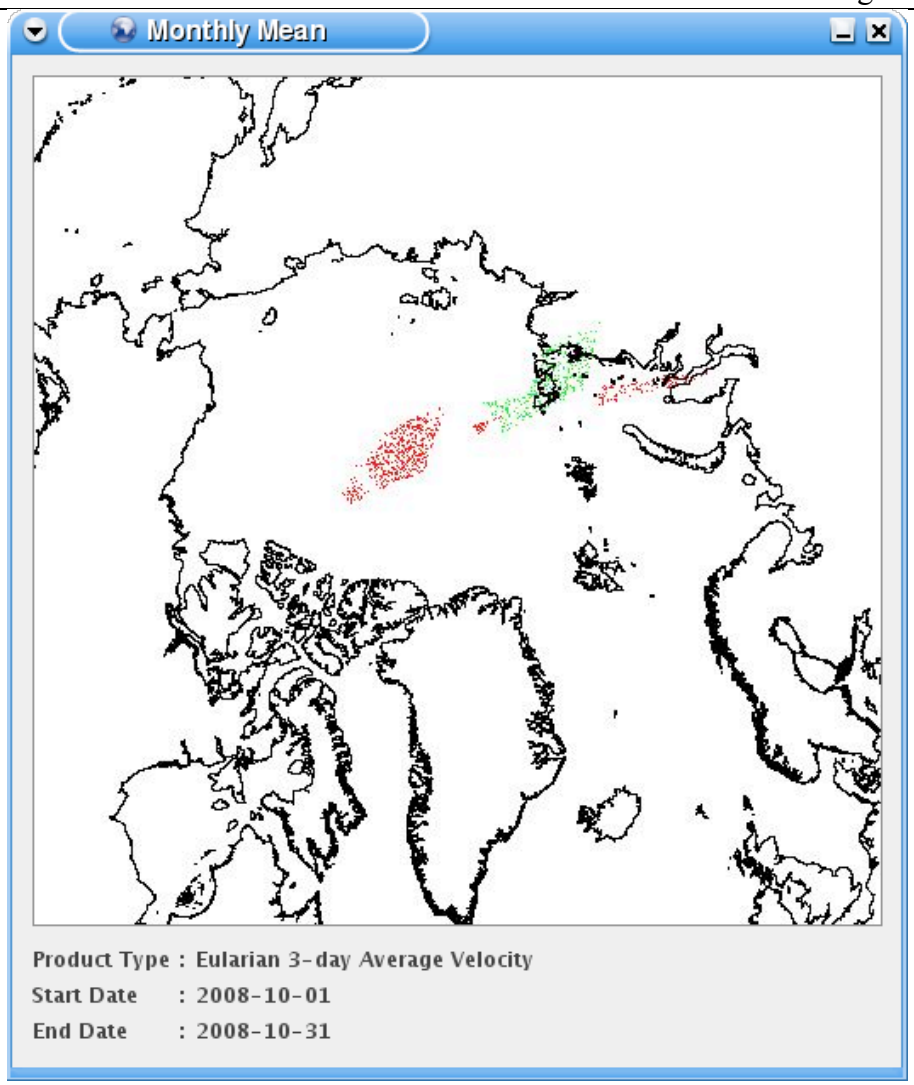
10.13 View Monthly Mean Image

Show Monthly Mean button in the Query Builder Window enables you visualize the Monthly Mean image for the gridded ice products. Only the *Month* part of the start date parameter in Query Builder window is used display the Monthly Mean image.

Perform the following steps to open Monthly Mean images:

1. In *Query Builder* window, select a product type (e.g. 'Eularian 3-day Average Velocity') from *Product Type* combo box.
2. Set the *Start Date* and click *'Show Monthly Mean'* button.

The Monthly Mean Arctic map opens in a new window. It displays the Product type, Start date & End date. Start date is the first day of the selected month of Start date parameter in Query Builder window. End date is the last day of the selected month of Start Date parameter in Query Builder window.



Show Monthly Mean button in Query Builder Window is only available for gridded ice products. For detailed description of gridded and non-gridded ice products, refer Annex section.

10.14 Show Mass Flux Products

Show Gateway Mass Flux button in the *Query Builder* Window enables you to visualize the Mass flux products. This functionality is only available for Mass Flux Gateway Monthly product.

Perform the following steps to open Mass Flux Window:

1. In the *Query Builder* window, select *Product Type* as 'Mass Flux Gateway Monthly'.
2. Select the start date and end date from Query Builder Window to set the time range for which Mass Flux images need to be visualized.
3. Click the *Show Gateway Mass Flux*. The *Mass Flux* Window appears.

Mass Flux Window displays Mass Flux values for the predefined gateways. Values for these gateways for each month are shown as an image. The images for each month in the selected time range are displayed as an animation (slide show) in the *Mass Flux* Window. The animation keeps repeating until you close the window. For every month in the time range selected, a mass flux image is shown in the animation. Corresponding month value is shown at the bottom of the window.

You can configure the delay between images in the animation from Settings Window.

11. Annex

11.1 Gridded/Non-gridded Ice Products

This section provides details about various ice-products.

Product ID	Description	Gridded	Grid Resolution	Temporal Resolution
EULIMGPAIR	Image Pair Displacements	No	N/A (5 km initial grid)	N/A
EULAVRVEL3	Eulerian 3day Average Velocity	Yes	5 km	3 days
EULAVRVELM	Eulerian Monthly Average Velocity	Yes	50 km	Monthly
LAGRANGIAN	Lagrangian Ice Motion Seasonal	No	N/A (5 km initial grid)	Seasonal
DTO3DAY5KM	Combined 3day Deformation, OWF, Thickness	Yes	5 km	3 days
DTOMON20KM	Combined 3day Deformation, OWF, Thickness 20km grid	Yes	20 km	Monthly
DTOMON100K	Combined Monthly Deformation, OWF, Thickness 100km grid	Yes	100 km	Monthly
OWFMON20KM	Open Water Fraction Monthly 20 km grid	Yes	20 km	Monthly
MASSFLXMON	Mass Flux Monthly	No	N/A	Monthly

11.2 globice_config.xsd

This section provides the XML Schema Design of *globice_config.xml* file, that is fetch while start-up of the GlobICE client application.

The *globice_config.xsd* file is a schema definition of xml file, typically expressed in terms of constraints on the structure and contents of xml.

The schema of *globice_config*.xsd is as follows:

```
<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:element name="config">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="appnameversion" type="xs:string" maxOccurs="1"
        minOccurs="0" />
      <xs:element name="copyrighttext" type="xs:string" maxOccurs="1"
        minOccurs="0" />
```

```
      <xs:element ref="clientConfigSOSURL" maxOccurs="1" minOccurs="1" />
      <xs:element ref="productType" maxOccurs="unbounded" minOccurs="0" />
    </xs:sequence>
    <xs:attribute name="type" type="xs:string" use="required" />
  </xs:complexType>
  </xs:element>

  <xs:simpleType name="httpURI">
    <xs:restriction base="xs:anyURI">
            <xs:pattern value="http://.*" />
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="clientConfigSOSURL" type="httpURI">
      <xs:annotation>
            <xs:documentation>A SOS HTTP URL for getting Client
       Configuration</xs:documentation>
      </xs:annotation>
  </xs:element>

    <xs:simpleType name="product_id">
      <xs:restriction base="xs:ID">
            <xs:enumeration value="MASSFLXMON" />
            <xs:enumeration value="EULIMGPAIR" />
            <xs:enumeration value="EULAVRVEL3" />
            <xs:enumeration value="DTO3DAY5KM" />
            <xs:enumeration value="LAGRANGIAN" />
            <xs:enumeration value="DTOMON20KM" />
            <xs:enumeration value="DTOMON100K" />
            <xs:enumeration value="OWFMON20KM" />
            <xs:enumeration value="EULAVRVELM" />
       </xs:restriction>
    </xs:simpleType>

  <xs:element name="productType">
     <xs:complexType>
       <xs:sequence>
          <xs:element name="product_id" type="xs:string" maxOccurs="1"
          minOccurs="1" />
          <xs:element name="prod_description" type="xs:string" maxOccurs="1"
          minOccurs="0" />
          <xs:element name="wms_base_url" type="httpURI" maxOccurs="1"
          minOccurs="0" />
          <xs:element name="search_base_url" type="httpURI" maxOccurs="1"
          minOccurs="0" />
          <xs:element name="metadata_base_url" type="httpURI" maxOccurs="1"
          minOccurs="0" />
          <xs:element name="dummy_serial" type="xs:string" maxOccurs="1"
          minOccurs="0" />
          <xs:element name="search_wms_base_url" type="httpURI" maxOccurs="1"
          minOccurs="0" />
          <xs:element name="aoi_product_base_url" type="httpURI"
          maxOccurs="1" minOccurs="0" />
```

```
            <xs:element name="monthly_mean_wms_base_url" type="httpURI"
            maxOccurs="1" minOccurs="0" />
            <xs:element name="total_area_base_url" type="httpURI" maxOccurs="1"
            minOccurs="0" />
            <xs:element name="file_download_base_url" type="httpURI"
            maxOccurs="1" minOccurs="0" />
            <xs:element name="grid_spacing" type="xs:int" maxOccurs="1"
            minOccurs="0" />
            <xs:element name="is_gridded" type="xs:boolean" maxOccurs="1"
            minOccurs="0" />
            <xs:element name="temporal_resolution" type="xs:string"
            maxOccurs="1" minOccurs="0" />
            <xs:element name="product_info_page_url" type="httpURI"
            maxOccurs="1" minOccurs="0" />
            <xs:element name="search_legend_url" type="httpURI" maxOccurs="1"
            minOccurs="0" />
            <xs:element name="ql_legend_url" type="httpURI" maxOccurs="1"
            minOccurs="0" />
            <xs:element name="monthly_legend_url" type="httpURI" maxOccurs="1"
            minOccurs="0" />
        </xs:sequence>
    </xs:complexType>
  </xs:element>

</xs:schema>
```

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